

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

# PCT

To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/EP2004/008247

International filing date (day/month/year)  
20.07.2004

Priority date (day/month/year)  
22.07.2003

International Patent Classification (IPC) or both national classification and IPC  
G01L5/16, F16C11/12

Applicant  
POLITECNICO DI MILANO

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/EP2004/008247

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**Box No. I Basis of the opinion**

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1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of::

a. type of material:

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material:

- ☐ in written format  
☐ in computer readable form

c. time of filing/furnishing:

- ☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/EP2004/008247

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**Box No. II    Priority**

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1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

4. Additional observations, if necessary:

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 26, 27

because:

☐ the said international application, or the said claims Nos. relate to the following subject-matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the whole application or for said claims Nos. 26, 27

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See separate sheet for further details

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/EP2004/008247

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**Box No. IV Lack of unity of invention**

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1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-25

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	3,5,6,10,12-25
	No: Claims	1,2,4,7-9,11
Inventive step (IS)	Yes: Claims	6,13,18-20,22-25
	No: Claims	1-5,7-12,14-17,21
Industrial applicability (IA)	Yes: Claims	1-25
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**Re Item IV.**

The separate inventions/groups of inventions are:

- Claims 1-25: Measuring forces and moments acting on a body
- Claims 26-27: Constructional details of an elastic Hooke's joint

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

Independent claims 1 and 8 disclose a method and a device for measuring forces and moments acting on a body comprising a measuring structure made of elements connected together through connection elements and measuring means. The problem solved by these technical features is to measure magnitudes in the structure in order to calculate the forces and moments acting on said stressed body.

Independent claim 26 discloses an elastic Hooke's joint for joining two elements and permitting a relative movement between said two joined elements. The technical features of this claim define constructional details of said Hooke's joint: bending elements comprising a cross consisting of two perpendicular arms joined by a spacing cross member, in which two pairs of thin plate are fixed to the arms. The problem solved by these technical features is to provide an elastic Hooke's joint which is able to join two elements with a spherical joint binding type having practically zero friction and clearance.

All technical features defining the invention of claims 1 and 8 on one hand and the invention of claim 26 form a difference between said two inventions. They are therefore not common (Rule 13.2 PCT). They further differ from each other to such an extent that they are not considered as corresponding technical features (Rule 13.2 PCT). The application lacks therefore the requirement of unity of invention stated in Rule 13.1 PCT.

**Re Item V.**

1 The following documents are referred to in this communication:

D1 : DE 41 01 732 A (KERNFORSCHUNGSZENTRUM KARLSRUHE GMBH) 23 July 1992 (1992-07-23)

D2: DE 40 18 558 A (SCHÖNHERR MICHAEL PROF DIPL-ING) 12 December 1991 (1991-12-12)

D3 : FR 2 708 101 A (CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE) 27 January 1995 (1995-01-27)

D4 : FR 2 545 606 A (HISPANO-SUIZA) 9 November 1984 (1984-11-09)

D5 : FR 2 696 002 A (JEULIN SA) 25 March 1994 (1994-03-25)

D6 : PREUSSER T, POLANSKY L: "External 6-component wind tunnel balances for aerospace simulation facilities" INTERNATIONAL CONGRESS ON INSTRUMENTATION IN AEROSPACE SIMULATION FACILITIES, GOTTINGEN, SEPT. 18 - 21, 1989, NEW YORK, IEEE, US, 18 September 1989 (1989-09-18), pages 488-495, XP010087296

D7 : DATABASE WPI, Section EI, Week 9328, Derwent Publications Ltd., London, GB; Class S02, AN 1993-225479, XP002301037 & SU 1 747 961 A (SPORT ARTICLES RES CONSTR TECHN INST) 15 July 1992 (1992-07-15)

**2 INDEPENDENT CLAIM 1**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parenthesis applying to this document) a method for measuring forces and moments acting on a body which comprises the following steps: application on said body of a measuring structure comprising elements connected together through a plurality of connection elements (page 2, lines 44-49; figure 1); stressing of said body by a force; measuring on said measuring structure of six magnitudes in several points (page 4, lines 9-10); deriving the force and moment vector from the mathematical relationship between forces and magnitudes (page 3, lines 26-39).

**3 INDEPENDENT CLAIM 8**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 8 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parenthesis applying to this document) a device for measuring forces and moments acting on a body (abstract) which comprises a measuring structure made up of elements and provided with a plurality of connection elements for the connection between said elements of the structure (page 2, lines 44-49; figure 1), and measuring means for measuring six deformation magnitudes from which the force vector and moment vector acting on the body can be worked out (page 4, lines 9-10; page 3, line 26-39):

**4 DEPENDENT CLAIMS 2-5, 7, 9-12, 14-17, 21**

Dependent claims 2-5, 7, 9-12, 14-17, 21 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT), see documents D1-D7 and the corresponding passages cited in the search report.

**5 DEPENDENT CLAIMS 6 and 22**

The combination of the features of dependent claims 6 and 22 is neither known from, nor rendered obvious by, the available prior art. These claims propose an alternative for measuring forces and moments in which the two triangular rigid elements are connected through three shells forming the measuring structure and connected to said rigid elements through a hinge and carriage type binding and a spherical joint. The number of elements in the measuring structure is thus lower; the mounting of the whole device is therefore simplified.



# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

# PCT

To:

ING. BARZANO' & ZANARDO  
MILANO S.p.A.

Attn: De Gregori, Antonella  
Via Borgonuovo 10  
I-20121 Milan  
ITALY

ING. R & Z. Milano

30 DIC. 2004

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing  
(day/month/year) 23/12/2004

Applicant's or agent's file reference

NdP 88306

**FOR FURTHER ACTION**

See paragraphs 1 and 4 below

International application No.

PCT/EP2004/008247

International filing date  
(day/month/year)

20/07/2004

Applicant

POLITECNICO DI MILANO

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35

**For more detailed instructions,** see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

**4. Reminders**

Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority



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Authorized officer

Gregory Adam

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

#### What documents must/may accompany the amendments?

##### Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.